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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,642	11/26/2003	Gunther Reissig	MAS-FIN-101	9720
24131	7590	12/07/2006	EXAMINER	
LERNER GREENBERG STEMER LLP P O BOX 2480 HOLLYWOOD, FL 33022-2480			JACOB, MARY C	
			ART UNIT	PAPER NUMBER
			2123	
DATE MAILED: 12/07/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/723,642

Applicant(s)

REISSIG, GUNTHER

Examiner

Mary C. Jacob

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 11/26/03.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-20 have been presented for examination.

#### ***Information Disclosure Statement***

2. References on pages 4 and 5 have been "lined out" since the references are in a foreign language and could not be considered by the Examiner.

#### ***Drawings***

3. The drawings are objected to because in Figure 1, the equations for  $f_1$ - $f_3$  contain an extra "(", so it appears that there is an error in the equations. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

Art Unit: 2123

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claim 1, lines 9-15 recite, "...the equations having the form  $f(t, x(t)...) = 0$ , and including...", followed by a listing of equations  $f_1-f_n$ . This claim language, specifically "and including" make it unclear as to whether the "system of equations" in line 8 include the listing of equations  $f_1-f_n$  or whether the "equations" include the equations  $f_1-f_n$ .

7. Claim 1 recites the use of "m" to designate both "m elements" and "m columns". It is unclear whether "m" refers to the same number, or different numbers.

8. Claim 1, line 28 contains an equation for  $f_j$  that contains "(t,)" at the end. It is unclear whether there is a missing element at the end of this equation, such as the element  $p$ .

9. Claim 1, line 28 contains the limitation "an  $i^{th}$  row of  $f$ ". It is unclear what  $f$  is. For instance, is it another matrix not previously recited?

10. Claim 1, line 36 recites the limitation "the element  $A(i,j)$ ", where "A" is underlined twice in line 36. There is insufficient antecedent basis for this limitation in the claim. It

Art Unit: 2123

is unclear whether this limitation refers to the dependence matrix  $A$  or an element  $A$  of the dependent matrix  $A$ .

11. Claim 1 recites the limitation "the numbers of those rows" in lines 38-39. There is insufficient antecedent basis for this limitation in the claim.

12. Claim 1 recites the limitation "the numbers of those columns" in lines 41-42. There is insufficient antecedent basis for this limitation in the claim.

13. Claim 2 recites the limitation "length  $n$ ". " $n$ " is used to refer to " $n$  rows" in Claim 1, lines 25-26. It is unclear whether this number " $n$ " is the same number, or a different number.

14. Claim 2 recites the limitation "length  $m$ ". " $m$ " is used to refer to " $m$  elements" in Claim 1, line 18 and " $m$  columns" in Claim 1, line 25. It is unclear whether this number " $m$ " is the same number, or a different number.

15. Claim 10 is directed to "a computer program product and computer program for providing error information relating to inconsistencies in a system of equations" in lines 1-19. However, lines 21-44 are directed to "the method comprising the following steps". It is unclear what is being claimed, the "computer program product and computer program" or "the method".

16. Claim 10 recites "which product is designed in such a way...and is of the form  $f(t, x(t)...) = 0$ , that is to say..." and is followed by a list of equations  $f_1-f_n$ . It is unclear whether the "product" is of this form,  $f(t, x(t)...) = 0$ , or whether the system of equations is of this form. Further, the language, "that is to say" is unclear language as it is not understood if and how the equations  $f_1-f_n$  relate to the equation  $f(t, x(t)...) = 0$ .

Art Unit: 2123

17. Claim 10 recites both the limitations "m elements" and "m columns". It is unclear whether this number "m" is the same number, or a different number.

18. Claim 10 recites the limitation "the numbers of those rows". There is insufficient antecedent basis for this limitation in the claim.

19. Claim 10 recites the limitation "the numbers of those columns". There is insufficient antecedent basis for this limitation in the claim.

20. Claim 11 recites the limitation "length n". "n" is used to refer to "n rows" in Claim 10. It is unclear whether this number "n" is the same number, or a different number.

21. Claim 11 recites the limitation "length m". "m" is used to refer to "m elements" and "m columns" in Claim 10. It is unclear whether this number "m" is the same number, or a different number.

22. Claim 10, line 26 contains an equation for  $f_j$  that contains "(t,)" at the end. It is unclear whether there is a missing element at the end of this equation, such as the element  $p$ .

23. Claim 10, line 26 contains the limitation "an  $i^{\text{th}}$  row of  $f$ ". It is unclear what  $f$  is. For instance, is it another matrix not previously recited?

Due to the number of 35 U.S.C. 112, second paragraph rejections, the examiner has provided a number of examples of the claim deficiencies in the above rejection(s), however, the list of rejections may not be inclusive. Applicant should refer to these rejections as examples of deficiencies and should make all necessary corrections to

Art Unit: 2123

eliminate the 35 U.S.C. 112, second paragraph problems and place the claims in proper format.

Due to the vagueness and a lack of a clear definition of the terminology and phrases used in the specification and claims, the claims have been treated on their merits as best understood by the examiner.

***Claim Rejections - 35 USC § 101***

24. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

25. Claims 1-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

26. Claims 1 and 10 appear to be directed to a recitation of abstract ideas (for example, "providing a system of equations") and mathematical algorithms and further, fail to produce a concrete, useful or tangible result. The claims recite outputting error information, but fail to recite how this error information is "output" (for example, is it output to a computer display for use by a user), fail to recite how this error information is useful and also fail to use or apply this error information in a real world application. Therefore the method does not provide a concrete, useful, or tangible result.

27. Claims 3, 4 and 8 recite "a computer program with computer-executable instructions for executing a method for numerical simulation...", Claims 10-11 recite "a computer program product and computer program...which product is designed in such a

Art Unit: 2123

way that it is possible to execute a method for providing error information relating to inconsistencies...". These claims appear to be directed to a computer program that lists the expressions of the program, but does not define any structural or functional interrelationship between the computer program and other claims elements of the computer, which permit the computer program's functionality to be realized. MPEP 2106.01 recites the following: "...computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory."

28. Claims 7, 12-15 recite "computer-readable medium" and "a data carrier", however, the specification recites that a "computer-readable medium" may be a "carrier signal for distance communication" (page 31, lines 5-10), therefore, the claims are directed to non-statutory subject matter. Claims that recite nothing but the physical characteristics of a form of energy are nonstatutory natural phenomena, therefore a claim reciting a signal encoded with functional descriptive material does not appear to fall within any statutory category of patentable subject matter.



***Claim Rejections - 35 USC § 103***

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claims 1, 3, 5, 7, 10, 12, 14, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al ("Structural Analysis of Differential-Algebraic Equation Systems-Theory and Applications", Computers Chem. Engng. Vol. 19, No. 8, pages 867-882, 1995).

31. As to Claims 1 and 10, Unger et al teaches the establishment of a dependence matrix for an differential algebraic system that would be the same dependence matrix as established by the method as per step 1 (page 872, 1<sup>st</sup> column, lines 8-26; page 873, column 1, last paragraph-column 2, line 19; Appendix). Unger et al teaches for a differential algebraic system, a dependence matrix results which can be described as the sum of a pattern with respect to the variable z and a pattern with respect to the first derivative of the variable z. It is an obvious extension to the observations made (page 873, proposition 3.1 and page 873, column 1, last paragraph-column 2, line 19) if further derivatives of the variable occur in the equation system, to describe the dependence matrix as the sum of a "pattern" with respect to the variable z, a "pattern" with respect to the second derivative of the variable z, and so on. Unger et al does not expressly teach the method as described in steps 2 and 3. However, Unger et al teaches that it is known

Art Unit: 2123

in the art to analyze inconsistencies in a system and when it is identified, to analyze the inconsistency and reason why the inconsistency is present in the system and to suggest changes to the modeling equations to eliminate the inconsistency prior to any numerical solution (Abstract, lines 8-9; page 874, column 1, lines 45-50; page 876; column 1, paragraph 3, "Besides the mode..."). Therefore, it would have been obvious to extend the method shown by Unger et al by steps 2 and 3 for issuing information that differ only in the manner in which the information is presented as per steps 2 and 3.

32. As to claims 3, 5, 7, 12, 14, 16, 18, Unger et al teaches a computer program with computer-executable instructions for executing the method as described, numerical simulation of the system and starting from prescribed influences on the system, predicting the behavior of the system (page 874, section 3.4, paragraph 1, sentence 1; and section 3.4, paragraph 4; page 875, "Applications", paragraph 1; page 879, section 4.4, paragraphs 1-3).

33. Claims 8, 9, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Unger et al as applied to claims 1 and 10 above, in view of Garcia-Sabiro et al (US Patent 6,266,630).

34. Unger et al teaches a computer program with computer-executable instructions for executing the method of analyzing and simulating a differential algebraic system.

35. Unger et al does not expressly teach downloading the computer program from an electronic data network onto a computer connected to the data network wherein the electronic data network is the Internet.

Art Unit: 2123

36. Garcia-Sabiro et al teaches providing a designer graphical feedback during the simulation of differential algebraic equations regarding the convergence of solutions for the modeling equations so that the designer is better able to debug the design (column 1, lines 50-59) wherein the program and simulation is performed in a computer system including data processing and storage components that can be interconnected by a network such as the internet, wherein it is understood that the connection of the computer components via the Internet would enable the downloading of the computer program product from the Internet (Figures 1 and 2; column 2, line 60-column 3, line 35).

37. Unger et al and Garcia-Sabiro et al are analogous art since they are both directed to the simulation of a system of differential algebraic equations.

38. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the computer program with computer-executable instructions for executing the method of analyzing and simulating a differential algebraic system as taught in Unger et al to further include the downloading of a computer program from an electronic data network such as the internet since Garcia-Sabiro et al teaches providing a designer graphical feedback during the simulation of differential algebraic equations regarding the convergence of solutions for the modeling equations so that the designer is better able to debug the design (column 1, lines 50-59).

***Conclusion***

39. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

40. Reissig ("Differential-Algebraic Equations and Impasse Points", IEEE Transactions on Circuits and Systems-I: Fundamental Theory and Applications, Vol. 43, No. 2, February 1996) teaches several classes of impasse points, relations between these classes and between impasse points that can occur in the analysis of differential algebraic equations.

41. Reissig et al ("Computing the Generic Index of the Circuit Equations of Linear Active Networks", IEEE International Symposium on Circuits and Systems, Vol. 3, pages 190-193, 1996) teaches an algorithm that determines the generic index of the circuit equations of an linear active electrical networks in polynomial time from the network topology alone.

42. Reissig et al ("Singularities of Implicit Ordinary Differential Equations", IEEE International Symposium on Circuits and Systems, Vol. 3, pages 326-329, 1998) teaches that implicit differential equations about certain impasse points may be transformed by diffeomorphisms into normal forms.

43. Kumar et al ("State-Space Realizations of Linear Differential-Algebraic-Equation Systems with Control-Dependent State Space", IEEE Transactions on Automatic Control, Vol. 41, No. 2, February, 1996) teaches the derivation of state-space realizations for the feedback control of linear, high-index differential-algebraic equation systems that are not controllable at infinity.

Art Unit: 2123

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.

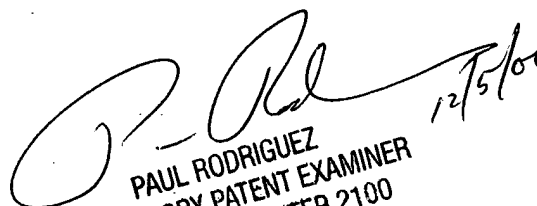
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Mary C. Jacob  
Examiner  
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